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Dr. Marshall Nirenberg  
National Institute of Heart, Lung  
and Blood  
Building 36, RC27  
9000 Rockville Pike  
Bethesda, MD 20892

Dear Dr. Nirenberg:

Based on your earlier work on neuroblastoma cells, we have been studying the involvement of the cyclic AMP system in opiate addiction in the rat locus coeruleus. Similar to your earlier findings, we have found that chronic morphine treatment increases levels of certain G-proteins, adenylate cyclase activity, cyclic AMP-dependent protein kinase activity, and certain phosphoprotein substrates for the protein kinase in this brain region. Interestingly, these effects were all specific to the locus coeruleus, as they were not observed in the other brain regions examined. Enclosed please find reprints that describe some of our work on opiate action in the locus coeruleus. I thought you might be interested in them, as they support and extend your novel proposal of a role for the cyclic AMP system in mediating opiate addiction elaborated over ten years ago.

Sincerely,



Eric J. Nestler, M.D., Ph.D.  
Assistant Professor of Psychiatry  
and Pharmacology

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